Michigan Department of Community Health

MICHIGAN DEPARTMENT OF COMMUNITY HEALTH
EPIDEMIOLOGY OF DISEASES OF THE HEART FACT SHEET

DECEMBER, 1999

DISEASES OF THE HEART IN MICHIGAN

INTRODUCTION

Diseases of the heart (DOH) includes several different cardiac diseases, such as rheumatic heart disease, hypertensive heart disease, ischemic heart disease, diseases of pulmonary circulation, heart failure, cardiomyopathy, and dysrhythmias. Ischemic heart disease is the most common form of DOH and can result in angina and myocardial infarction (heart attack). The long-term sequelae of many DOH, including ischemic heart disease, may include heart failure. Many DOH may be prevented by controlling underlying risk factors, primary prevention efforts or by early identification and treatment of risk factors.

In 1997, DOH was the most common cause of death in Michigan responsible for 27,150 or 33 percent of all deaths. One in six deaths occurred in persons less than 65. In 1996, there were 159,933 hospital admissions due to DOH. Almost 40 percent were of patients less than 65 years old.

RACIAL AND GENDER DIFFERENCES

Mortality due to DOH varies among racial and gender groups. As shown in Table 1, mortality rates due to DOH are one to two times higher among African-Americans aged 35-64 and 65-84 compared with whites. Only in the oldest group (85+) are the rates higher in whites.

Table 2 illustrates the striking racial and gender differences that also exist in the average age of hospitalization and death due to DOH. Both hospitalizations and deaths occur approximately five to eight years earlier in African-Americans compared with whites.

AGE-ADJUSTED MORTALITY TRENDS

Trends in age-adjusted mortality rates due to DOH by race and gender (Figure 1) illustrate the differences discussed above. African-Americans have higher mortality than whites, and males have higher mortality rates than females. Mortality rates due to DOH have declined dramatically in recent decades, especially among whites. For example, age-adjusted mortality rates for DOH in Michigan declined 42 percent for white males and 33 percent for white females, but only 23 percent for African-American males and females.

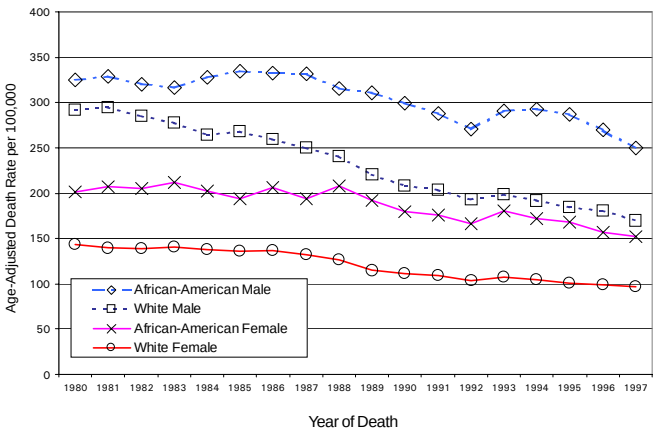
Table 1
Mortality Rate Ratios for DOH
African-American versus White
by Age and Gender, Michigan, 1997

Age Group	35 - 64	65 - 84	85 & over
Male	2.0	1.2	0.8
Female	2.5	1.2	0.7

Table 2
Average Age of Hospitalization and Death
Diseases of the Heart, Michigan 1997

	White		African-American	
	Male	Female	Male	Female
Hospitalization	65.2	71.1	60.6	64.2
Death	73.5	81.4	67.8	73.9

Figure 1
Age-Adjusted Mortality Rates by Race and Gender
Diseases of the Heart - Michigan, 1980 - 1997



AGE-SPECIFIC MORTALITY TRENDS

For the most part, trends in race, gender and age-specific mortality rates mirror the age-adjusted rates presented in Figure 1. However, racial differences are larger in younger age groups, and there is wide variability in the rate of decline in mortality among the different age groups since 1980.

35-64-year-olds

Figure 2 illustrates the consistent declines in DOH mortality rates among 45-64-year-olds for all four race and gender groups between 1980 and 1997. Rates decreased more dramatically for whites (males 56%; females 49%) compared with African-American (males 36%; females 33%). Although mortality rates are the lowest in this age group, large disparities by race and gender exist.

65-84-year-olds

Figure 3 displays trends in age-specific mortality due to DOH in 65-84-year-olds. Overall trends are similar to the 35-64 age group although differences by race and gender mortality are less pronounced. The absolute rate of mortality is much higher (1,000 - 1,900 per 100,000 person years in 1997) than the 35-64 year age group. The overall rate of decline of DOH mortality in 65-84-year-olds is less pronounced although greater total declines were seen in whites (males 37%; females 32%) than African-Americans (males 18%; females 26%).

85 years of age and over

As can be seen from Figure 4, mortality rates due to DOH are extremely high in this age group (over 4,000 per 100,000 in 1997), and white rates are now higher than African-American rates. The largest percent decreases were seen for males, (African-American 36%; white 24%), with smaller decreases observed for females (African-American 17%; white 14%).

Figure 2
Age-specific Mortality Rates - Diseases of the Heart
Race and Gender, Ages 35 - 64, Michigan 1980 - 1997

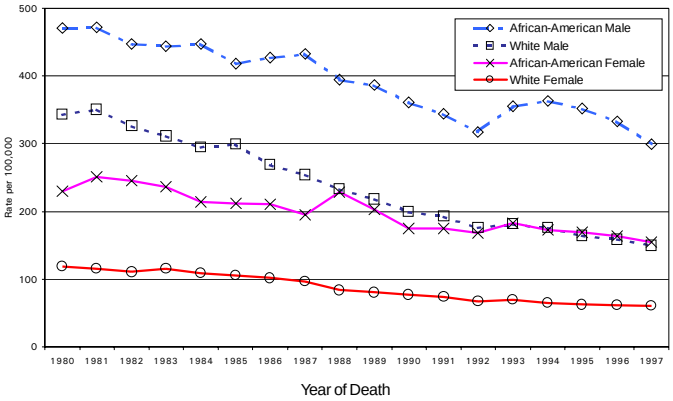


Figure 3
Age-specific Mortality Rates - Diseases of the Heart
Race and Gender, Ages 65 - 84, Michigan, 1980 - 1997

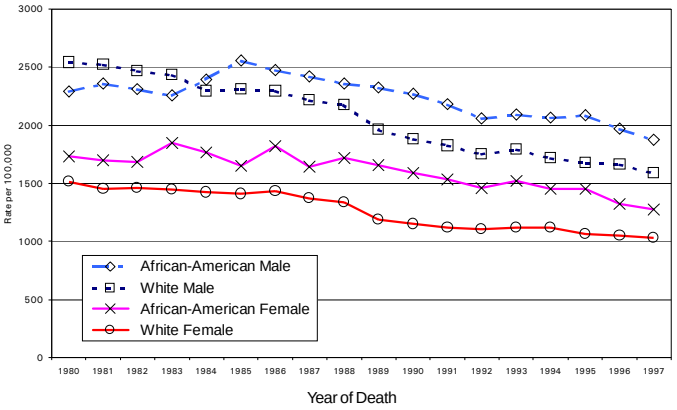
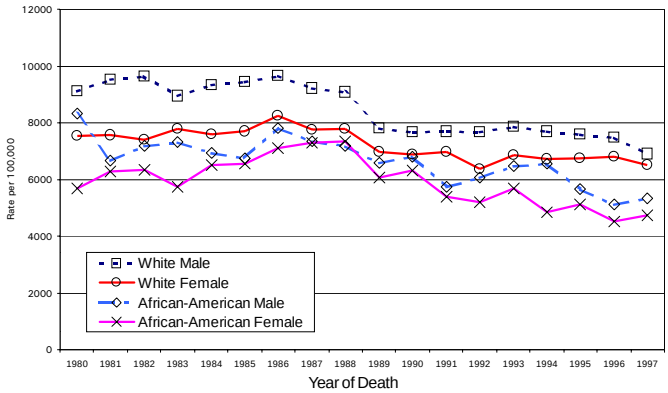


Figure 4
Age-specific Death Rates - Diseases of the Heart
Race and Gender, Ages 85 and over, Michigan, 1980 - 1997



PRIMARY PREVENTION OF DOH

Identification of risk factors and educating people about life style changes needed to reduce risk factors are crucial to preventing the onset of DOH. Table 3 describes modifiable risk factors that increase the probability of developing heart disease.

The population-attributed proportion represents the proportion of disease in a population that is associated with a risk factor. It is dependent on both the prevalence of the risk factor in the population and the relative risk (which measures the magnitude of the association between a risk factor and the disease). Thus, controlling high cholesterol and high blood pressure, increasing physical activity, and quitting smoking would have the greatest effects on reducing the occurrence of DOH. Non-modifiable risk factors for DOH include increasing age, male gender, and family history and heredity.

Table 4 displays results of the 1997 Michigan Behavioral Risk Factor Survey which estimates that 84 percent of adults in Michigan have at least one potentially modifiable risk factor for DOH. Over 50 percent have two or more risk factors.

SECONDARY AND TERTIARY PREVENTION OF DOH

Secondary prevention includes the early identification and treatment of persons with DOH (e.g. angina) and their risk factors (e.g. hypertension, high cholesterol). Tertiary prevention includes treatment and rehabilitation of patients who have DOH (e.g. heart attack). In addition to life style changes to improve diet, exercise, weight control and smoking cessation, the American Heart Association (AHA) recommends regular use of low-dose aspirin in patients with DOH. Other secondary prevention treatments include control of high cholesterol and high blood pressure. Following a coronary event, the AHA recommends that these various therapies take place within an overall cardiac rehabilitation program of exercise training, risk factor modification and psychosocial and vocation counseling.

Table 3
Modifiable Risk Factors for Diseases of the Heart[2]

Risk Factor	Magnitude of Risk	Attributed Proportion	Range
High Blood Pressure	Moderate RR 2 - 4	25%	20-29%
High Cholesterol		43%	39-47%
Diabetes		8%	1-15%
Cigarette Smoking		22%	17-25%
Obesity	Weak RR <2	17%	7-32%
Physical Inactivity		35%	23-46%
Environmental Tobacco Smoke Exposure		***	***

Table 4
Risk Factors for Diseases of the Heart
Behavioral Risk Factor Survey, 1997

Risk Factor	Michigan	U.S.	Rank
High Blood Pressure	23.3%	23.0%	22 (tied)
Cigarette Smoking	26.0%	23.2%	10
No Leisure Activity (1996)	23.1%	27.8%	38
Overweight	34.9%	31.1%	4 (tied)
Diabetes	5.8%	4.8%	10
High Cholesterol	31.2%	28.7%	8 (tied)
One or more risk factor	84.0%	***	***
Two or more risk factors	50.0%	***	***

GUIDELINES TO REDUCE DISEASES OF THE HEART - AMERICAN HEART ASSOCIATION[1]

1. If you smoke, stop.
2. Know your blood pressure; have it checked regularly, and keep high blood pressure under control.
3. If you have high cholesterol, follow your doctor's recommendations to keep it under control.
4. Keep your weight at the appropriate level.
5. If you are diabetic, follow your doctor's recommendations.
6. Include physical exercise in your daily routine.
7. Eat a lower sodium and low-fat diet.
8. Find out if you have circulation problems and take the prescribed medications if you do.

RESOURCES

Cardiovascular Health and Nutrition Section
Michigan Department of Community Health
3423 N. ML King, Jr. Blvd., P.O. Box 30195
Lansing, MI 48909
517-335-8374

American Heart Association
7272 Greenville Ave.
Dallas, TX 75231-4596
1-800-AHA-USA1 241-373-4596
http://www.amhrt.org

American Heart Association - Midwest Affiliate
16310 West 12 Mile Road, P.O. Box 760160
Lathrup Village, MI 48076-0160
248-557-9500 Fax: 248-569-3353
http://www.amhrt.org/affili/MI/index.html

National Heart, Lung and Blood Institute
National Institutes of Health
P.O. Box 30105, Bethesda, MD 20824-0105
301-251-1222
http://www.nhlbi.nih.gov

1. Adapted from American Heart Association:http:/www.amhrt.org 1999
2. Adapted from Brownson RC, Remington PL, Davis JR: Cardiovascular Disease. *Chronic Disease Epidemiology and Control* Washington D.C. American Public Health Association. 1993

METHODS

Mortality data were obtained from the 1980-1997 Michigan Resident Death File (MRDF) and hospitalization data were obtained from the 1990-1997 Michigan Inpatient Data Base (MIDB) maintained by the Division for Vital Records and Health Statistics in the Michigan Department of Community Health. MRDF certificates coded as ICD-9 390-398, 402, 404-429 (Diseases of the Heart) as the underlying cause of death were analyzed. The MIDB contains records of each admission for all short-stay acute care facilities in Michigan. Only cases with a primary diagnosis of ICD-9-CM 390-398, 402, 404-429 were included.
Population estimates for rate calculations were obtained from the Michigan Office of the State Demographer.
Death rates were age-adjusted by the direct method using the U.S. 1940 population as the standard. National age-adjusted rates were obtained from the National Center for Health Statistics.

Suggested citation: Hogan JG, Reeves MJ. Epidemiology of Diseases of the Heart Fact Sheet, Bureau of Epidemiology, Michigan Department of Community Health.

For further information about the Diseases of the Heart Epidemiology Fact Sheet, contact either the Epidemiology Services Division (517) 335-8806 or the Cardiovascular Health and Nutrition Section (517) 335-8374 at the Michigan Department of Community Health.

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